



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 09/891,997  
Applicant(s): Tsukasa YAGI, Masaaki NAKAI, Eiji YAMAKAWA, Kazuaki  
OKUMURA, Hiroshi NITTAYA and Katsuhiko ASAI  
For: LIQUID CRYSTAL DISPLAY APPARATUS  
Confirmation No.: 9619  
Customer No.: 24367  
Docket No.: 15162/03790  
Filed: June 26, 2001  
Group Art Unit: 2871  
Examiner: Hoan C. Nguyen

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**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

This Request is filed in response to the Final Rejection dated January 13, 2006,  
which provides for a response period ending April 13, 2006.

Applicants request review of the Final Rejection in the above-identified  
application. No amendments are being filed with this request.

A Petition for Two-Month Extension of Time is being filed concurrently herewith.

This Request is being filed concurrently with a Notice of Appeal.

The review is requested for the reasons stated beginning on page 2 of this Request.

## **REASONS FOR REQUEST**

### **Status Of Application**

Claims 1-26 and 29-48 are pending in the application, with claims 6-26 and 30-43 withdrawn from consideration. Claim 48 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. Claims 1-5, 29, and 44-48 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,920,409 to Yamagishi ("Yamagishi"), in view of U.S. Patent No. 5,734,367 to Tsuboyama et al. ("Tsuboyama") and U.S. Patent No. 6,414,669 B1 to Masazumi ("Masazumi").

### **35 U.S.C. § 112, Second Paragraph**

The Office Action, on page 2, asserts claim 48 cites two contradictory features:

- image data **to display the pixels** on the row of the matrix **corresponding to the selected scanning electrode** (lines 19-20),
- while each of the first scanning electrodes is selected, the **pixels corresponding to the selected first scanning electrodes are not display[ed]**.

[Emphasis in Office Action.] The features are in fact not contradictory. As disclosed in paragraph [0060] of the present application, "writing on each scanning line comprises a reset step, a selection step and an evolution step, and during these three steps, the liquid crystal display is in a blackout state in which the observer sees the light absorbing layer on the backside." In other words, "while each of the first scanning electrodes is selected, [*i.e.*, the selection step] the pixels corresponding to the selected first scanning electrodes are not displayed." Following the writing on each scanning line, "the liquid crystal comes to a display state," *see* paragraph [0060]. Thus, displaying an image comprises multiple states, including a writing state (during which the display is blacked out) and a display state (during which the written image is displayed). For this reason, the limitations of

claim 48 are, in fact, not contradictory and do particularly point out and distinctly claim the subject matter which the Applicants regard as the invention.

The Office Action further asserts the Applicants have failed to point out where in the specification this feature is disclosed. As noted above, paragraph [0060] of the present specification supports these limitations. Further, as noted in paragraph [0060], Fig. 7 illustrates the blackout and display states, in which the blackout state includes the selection step. It should be noted that the Applicants, in the Amendment by which claim 48 was added (dated November 2, 2005), indicated support for claim 48 could be found in paragraph [0060].

Accordingly, it is respectfully requested that the rejection of claim 48 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention, be reconsidered and withdrawn.

### **Exemplary Claim**

By way of example, and for the Examiner's convenience, the relevant portions of claim 1 are provided below:

1. . . .  
a liquid crystal layer comprising liquid crystal . . . the liquid crystal having a memory effect, the liquid crystal exhibiting a cholesteric phase;  
a number of first scanning electrodes aligned in a first direction at a first pitch, . . .  
a plurality of signal electrodes facing the first scanning electrodes with the liquid crystal layer sandwiched between the signal electrodes and the first scanning electrodes, the signal electrodes being aligned in the second direction at a second pitch wider than the first pitch . . . .

The Office Action asserts that "scanning" and "signal" electrodes are little more than labels, which can easily be swapped. To this end, the Office Action renames the scanning and signal electrodes of Yamagishi to satisfy the pitch requirements of claim 1.

However, as explained on pages 14-16 of the Preliminary Amendment dated January 24, 2005, and again on pages 14-15 of the Amendment dated November 2, 2005, such renaming produces unacceptable visual effects due to the very elongated resultant pixel. In summary, one of skill in the art would not be motivated to change a pixel having a 1.5:1 length to height ratio to one having a 6:1 ratio due to the significant degradation in the image produced by an array of such distorted pixels. In addition, interchanging the labels of the scanning and signal electrodes does not solve the blackout problem described in detail below. In fact, changing the labels will merely result in the flicker caused by blackout to change directions – from being a series of horizontal black lines to being a series of vertical black lines. The present invention solves this blackout problem; it does not merely change the direction of the problem.

Further, the elongated pixels illustrated in Yamagishi, and upon which the Office Action relies, is the prior art, *see* column 1, lines 15-17. These elongated pixels produce a number of problems that Yamagishi solves, in part, by using square pixels as illustrated in each of Figs. 3-8 and 10, corresponding to Yamagishi's seven preferred embodiments. Thus, Yamagishi itself clearly teaches away from the use of elongated pixels of any kind, let alone one with the specific orientation required by claim 1.

A brief description of the blackout problem inherent in liquid crystals having a cholesteric phase follows. Liquid crystals having a cholesteric phase, while retaining an image without power, take longer to draw a new image as the liquid crystals must be reset, a lengthy process not required by other types of liquid crystals. Such slow updating of an image causes the image to flicker as the individual lines blackout during the resetting process. As explained in paragraphs [0064]-[0066] and illustrated in Figs. 6-9 of the present application, and as emphasized on page 16 of the Preliminary Amendment dated January 24, 2005, the pixel shape can greatly impact the problem of blackout. Through the use of the appropriately shaped pixels, as illustrated in Fig. 8b, the human eye will see the intended image of an "A" as illustrated in Figs. 9a and 9b, regardless of which interlace cycle is being displayed. In contrast, using the prior art pixel shape of Fig. 8a,

both horizontal lines of the “A” will be off at the same time during the interlace cycle, *i.e.*, they will be blacked out during reset. The displayed “A” in such a case will flicker, a problem solved by the present invention and its unique pixel shape and orientation.

Lastly, as noted in the Office Action, neither Yamagishi, the primary reference, nor Tsuboyama discloses a “liquid crystal having a memory effect, the liquid crystal exhibiting a cholesteric phase.” For this reason, the Office Action raises Masazumi for its disclosure related to such liquid crystals. Because Yamagishi does not disclose a liquid crystal exhibiting a cholesteric phase, it cannot disclose the blackout problem inherent in such liquid crystals, the issue addressed by the present invention. The simple substitution of such liquid crystals into the apparatus of Yamagishi’s prior art would result in a display having this blackout problem. Thus, the resultant display would have an unacceptable image, thereby teaching away from this limitation of claim 1.

Like claim 1, independent claims 47 and 48 include limitations regarding the liquid crystals exhibiting a cholesteric phase and the shape and orientation of the pixels. Thus, claims 47 and 48 are considered allowable over the combination of Yamagishi, Tsuboyama, and Masazumi for at least the same reasons as claim 1 discussed above.

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Pre-Appeal Brief Request For Review dated June 13, 2006  
Reply to Office Action of January 13, 2006

**CONCLUSION**

In view of the foregoing, this application is considered to be in condition for allowance, and an early reconsideration and a Notice of Allowance are respectfully requested.

Respectfully submitted,

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